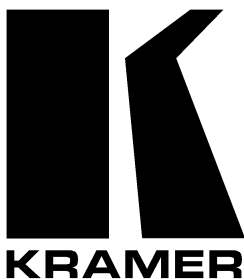


Kramer Electronics, Ltd.



USER MANUAL

Model:

VS-81DVI-R

8x1 DVI Switcher

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This addendum outlines three changes to the **VS-81DVI-R** user manual:

First change:

On page 5, Table 2, item 3 is replaced as follows:

3	<i>SELECTED INPUT</i> 7-segment Display	Displays the selected input that is currently switched to the output ¹
---	---	---

Second change:

On page 15, before section 7, a new section is added “6.4 Acquiring the EDID”, which includes the following text:

To acquire the EDID, do the following:

1. Turn the POWER off.
2. Press both the PANEL LOCK button and the INPUT SELECTOR 8 button at the same time while turning the POWER on again.
The front panel display initially shows a blinking “E” followed by the input numbers from 1 to 8 that blink, until the unit has completed reading the EDID.

While the machine is acquiring the EDID, do not press any button and do not turn the power off
--

3. Release the PANEL LOCK button and the INPUT 8 button.

If an output was connected, the output EDID is read at each input. If an output was not connected, the default EDID is read at each input.

The default EDID settings are:

Max. resolution – 1600x1200; Max. frequency – 60Hz.

Third change:

You can download the Kramer Protocol 2000 from our Web site at:
<http://www.kramerelectronics.com>

¹ If an acceptor is not connected to the output, the SELECTED INPUT 7-segment Display shows a dot beside the selected input number

1 Introduction

Welcome to Kramer Electronics (since 1981): a world of unique, creative and affordable solutions to the infinite range of problems that confront the video, audio and presentation professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 350-plus different models now appear in 8 Groups¹, which are clearly defined by function.

Congratulations on purchasing your Kramer **VS-81DVI-R** *8x1 DVI Switcher*.

The **VS-81DVI-R** is ideal for conference room presentations and advertising applications, as well as for rental and staging.

Each package includes the following items:

- **VS-81DVI-R** *8x1 DVI Switcher*
- Power cord and Null-modem adapter
- Windows®-based Kramer control software²
- Windows®-based Ethernet Configuration Manager and Virtual Serial Port Manager
- Kramer **RC-IR1** Infra-Red Remote Control Transmitter³ (including the required battery and a separate user manual⁴)
- Power cord
- This user manual⁴

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual
- Use Kramer high performance high resolution DVI cables⁵

1 GROUP 1: Distribution Amplifiers; GROUP 2: Video and Audio Switchers, Matrix Switchers and Controllers; GROUP 3: Video, Audio, VGA/XGA Processors; GROUP 4: Interfaces and Sync Processors; GROUP 5: Twisted Pair Interfaces; GROUP 6: Accessories and Rack Adapters; GROUP 7: Scan Converters and Scalers; and GROUP 8: Cables and Connectors

2 Downloadable from our Web site at <http://www.kramerelectronics.com>

3 Previously known as the IR-1 / IR-1-01

4 Download up-to-date Kramer user manuals from our Web site at <http://www.kramerelectronics.com>

5 The complete list of Kramer cables is on our Web site at <http://www.kramerelectronics.com>

3 Overview

The **VS-81DVI-R** is a technologically advanced, high quality 8x1 switcher for DVI-D signals supporting the DDWG DVI 1.0 standard.

With a bandwidth of 1.65GHz, the **VS-81DVI-R** can switch signals having resolutions up to UXGA, including all HDTV formats. Since high-resolution DVI signals are very sensitive to cable quality and to PCB layout, the **VS-81DVI-R** uses a carefully designed PCB, which includes all buffering, conditioning and amplifying circuitry to provide a reclocked top-notch output signal.

In addition the **VS-81DVI-R**:

- Includes DVI-I connectors to make it compatible with all types of DVI cables
- Features 8 input selector buttons, which automatically light up when the unit detects an active signal on those inputs.
- Includes a built-in reclocking block that regenerates the DVI signal, so that several units may be cascaded
- Automatically reads and stores, in non-volatile memory, the EDID¹ block of the display device
- Does not support HDCP (High Definition Digital Content Protection)
- Includes a MUTE button to disconnect the output and a PANEL LOCK button to prevent unwanted tampering with the buttons on the front panel
- Fits in one vertical space of a standard 19" professional rack enclosure

Control the **VS-81DVI-R** using the front panel buttons, or remotely via:

- RS-232 serial commands transmitted by a touch screen system, PC, or other serial controller
- The Kramer infra-red remote control transmitter
- The ETHERNET

To achieve the best performance:

- Connect only good quality connection cables, thus avoiding interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality and position your Kramer **VS-81DVI-R** away from moisture, excessive sunlight and dust

¹ EDID is Extended Display Identification Data

3.1 Terminology Used in this User Manual

Table 1 defines some terms that are used in this user manual.

Table 1: Terminology Used in this User Manual

Term	Definition
802.3	The standard specification for ETHERNET that is maintained by the Institute of Electrical and Electronics Engineers (IEEE).
Dynamic Host Configuration Protocol (DHCP)	Allows the network administrator to distribute IP addresses from a central point and automatically send a new IP address when an Ethernet point is plugged into a different network location.
Gateway	A network position serving as an entry to another network. On the Internet, a node or stopping point can be either a gateway node or a host (end-point) node.
IP Address	A 32-binary digit number that identifies each sender or receiver (within a network via a particular server or workstation) of data (HTML pages or e-mails) that is sent in packets across the Internet. Every device connected to an IP network must have a unique IP address. This address is used to reference the specific unit.
Local Area Network (LAN)	Computers sharing a common communications line or wireless link, which often share a server within a defined geographic area.
Media Access Control (MAC) Address	A computer's unique hardware number (or address) in a LAN or other network. On an Ethernet LAN, the (MAC) address is identical to the Ethernet address.
Transmission Control Protocol/Internet Protocol (TCP/IP)	The basic communication language or protocol of the Internet that breaks the message into appropriately sized packets for the network, and can be used as a communications protocol in an intranet or an extranet.

4 Your VS-81DVI-R 8x1 Switcher

Figure 1 illustrates the front and rear panels of the **VS-81DVI-R**. Table 2 and Table 3 define the front and rear panels of the **VS-81DVI-R**, respectively.

Your VS-81DVI-R 8x1 Switcher

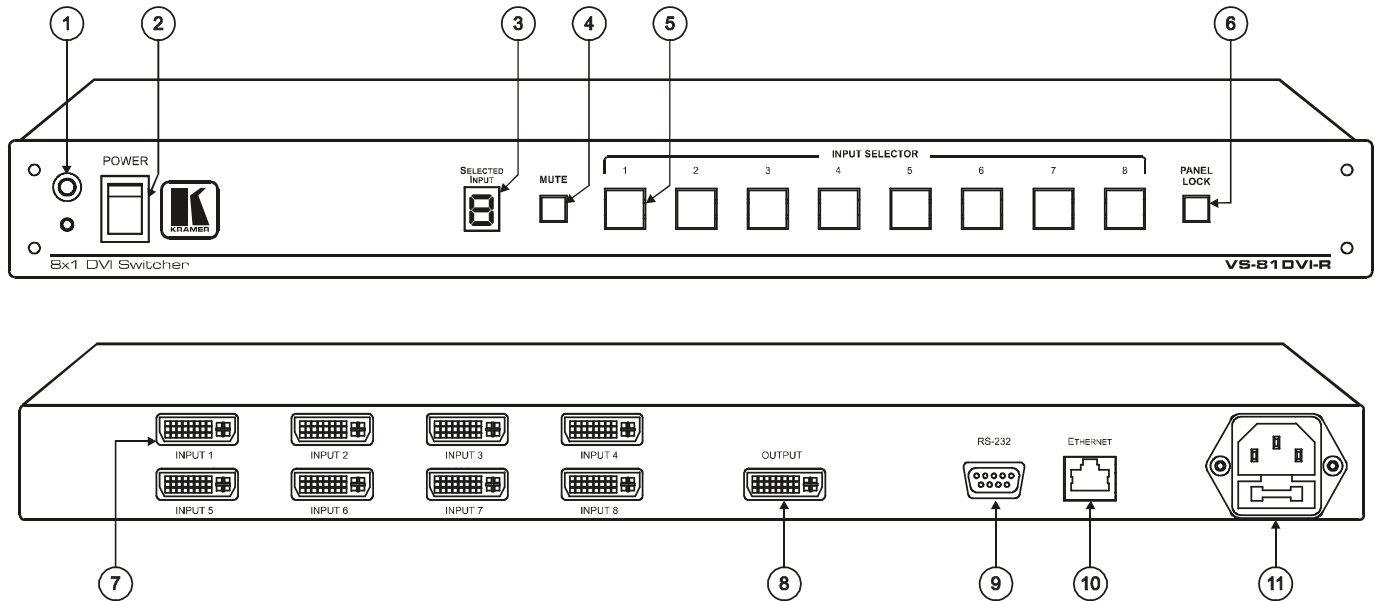


Figure 1: VS-81DVI-R 8x1 DVI Switcher

Table 2: VS-81DVI-R 8x1 DVI Switcher Front Panel Features

#	Feature	Function
1	IR Receiver	The red LED lights when receiving signals from the Infra-red remote control transmitter
2	POWER Switch	Illuminated switch for turning the unit ON or OFF
3	SELECTED INPUT 7-segment Display	Displays the selected input that is currently switched to the output
4	MUTE Button	Press to disconnect the output
5	INPUT SELECTOR Buttons	Press the INPUT button (1 to 8) to select input ¹
6	PANEL LOCK Button	Press to disengage the front panel buttons

Table 3: VS-81DVI-R 8x1 DVI Switcher Rear Panel Features

#	Feature	Function
7	INPUT DVI-I Connectors	Connect to the DVI-D sources (from 1 to 8)
8	OUTPUT DVI-I Connector	Connect to the DVI-D acceptor
9	RS-232 DB 9F Port	Connects to the PC or the RS-232 Remote Controller
10	ETHERNET Connector	Connects to the PC or other Ethernet Controller
11	Power Connector with Fuse	AC connector enabling power supply to the unit

¹ The input buttons automatically illuminate when the unit detects an active signal on that input. For example, if inputs 4, 6 and 7 are connected and active, the INPUT SELECTOR buttons 4, 6 and 7 illuminate

5 Installing the VS-81DVI-R on a Rack

This section describes what to do before installing on a rack and how to rack mount.

Before Installing on a Rack

Before installing on a rack, be sure that the environment is within the recommended range:	
Operating temperature range	+5 to +45 Deg. Centigrade
Operating humidity range	5 to 65 % RHL, non-condensing
Storage temperature range	-20 to +70 Deg. Centigrade
Storage humidity range	5 to 95% RHL, non-condensing



CAUTION!!

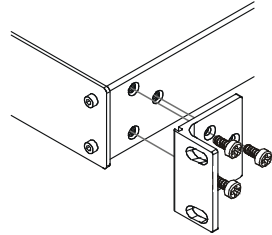
When installing on a 19" rack, avoid hazards by taking care that:

- 1 It is located within the recommended environmental conditions, as the operating ambient temperature of a closed or multi unit rack assembly may exceed the room ambient temperature.
- 2 Once rack mounted, enough air will still flow around the machine.
- 3 The machine is placed straight in the correct horizontal position.
- 4 You do not overload the circuit(s). When connecting the machine to the supply circuit, overloading the circuits might have a detrimental effect on overcurrent protection and supply wiring. Refer to the appropriate nameplate ratings for information. For example, for fuse replacement, see the value printed on the product label.
- 5 The machine is earthed (grounded) in a reliable way and is connected only to an electricity socket with grounding. Pay particular attention to supply connections other than direct connections to the branch circuit (for example, the use of power strips), and that you use only the power cord that is supplied with the machine.

How to Rack Mount

To rack-mount the machine:

- 1 Attach both ear brackets to the machine. To do so, remove the screws from each side of the machine (3 on each side), and replace those screws through the ear brackets.



- 2 Place the ears of the machine against the rack rails, and insert the proper screws (not provided) through each of the four holes in the rack ears.

Note that:

- In some models, the front panel may feature built-in rack ears
- Detachable rack ears can be removed for desktop use
- Always mount the machine in the rack before you attach any cables or connect the machine to the power
- If you are using a Kramer rack adapter kit (for a machine that is not 19"), see the Rack Adapters user manual for installation instructions (you can download it at: <http://www.kramerelectronics.com>)

6 Connecting a VS-81DVI-R 8x1 DVI Switcher

To connect the **VS-81DVI-R 8x1 DVI Switcher** (as illustrated in Figure 2), do the following¹:

1. Connect up to 8 DVI sources (for example, DVI computer graphics sources) to the INPUT connectors.
2. Connect the OUTPUT connector to the DVI acceptor (for example, a DVI display).
3. If required, connect a PC and/or controller to the RS-232 port (see section 6.1) and/or the ETHERNET port (see section 6.2).
4. Connect the power connector to the mains electricity.
After turning on the power, press an INPUT SELECTOR button (1 to 8) to choose which DVI input to route to the output².

¹ Switch OFF the power on each device before connecting it to your VS-81DVI-R. After connecting your VS-81DVI-R, switch on its power and then switch on the power on each device

² If the input is connected and active, the respective input button illuminates

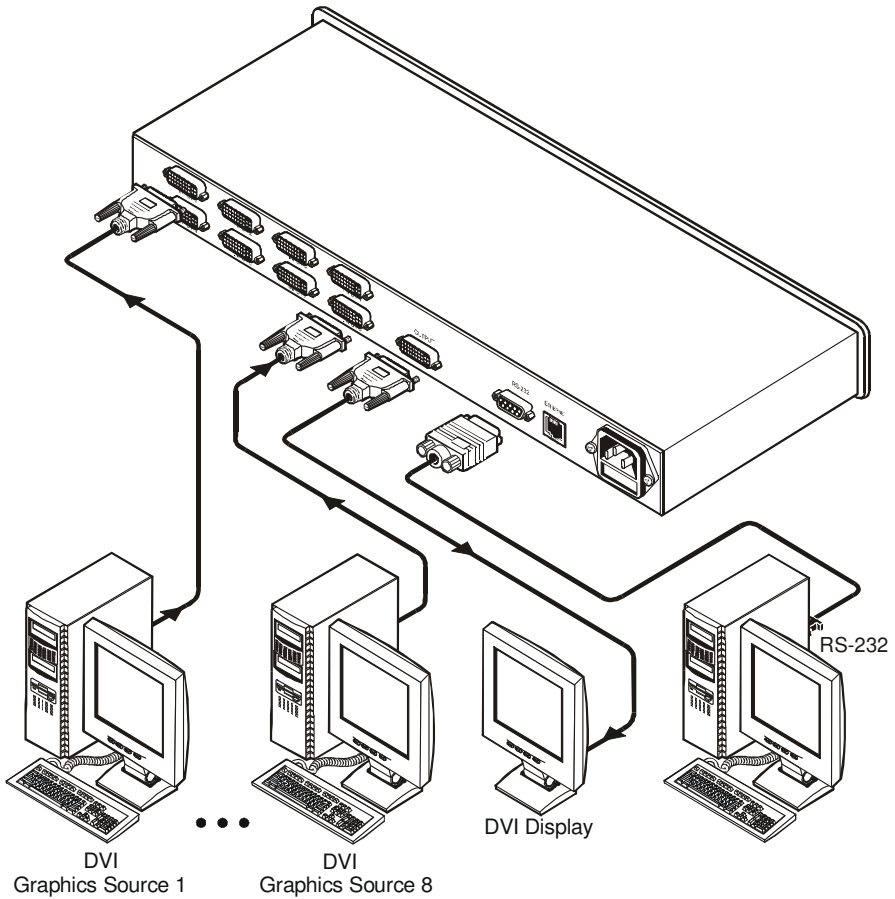


Figure 2: Connecting a VS-81DVI-R 8x1 DVI Switcher

6.1 Controlling via RS-232 (for example, using a PC)

To connect a PC to the **VS-81DVI-R** unit, using the Null-modem adapter provided *with* the machine (recommended):

- Connect the RS-232 DB9 rear panel port on the Master **VS-81DVI-R** unit to the Null-modem adapter and connect the Null-modem adapter with a 9-wire flat cable to the RS-232 DB9 port on your PC

To connect a PC to the **VS-81DVI-R** unit, *without* using a Null-modem adapter:

- Connect the RS-232 DB9 port on your PC to the RS-232 DB9 rear panel port on the Master **VS-81DVI-R** unit, as Figure 3 illustrates

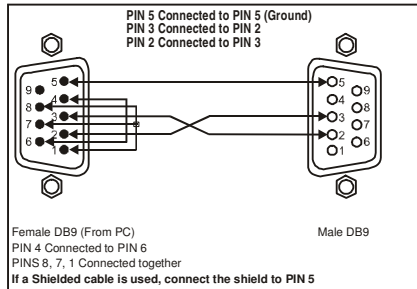


Figure 3: Connecting a PC without using a Null-modem Adapter

6.2 Controlling the VS-81DVI-R via the ETHERNET Port

You can connect the **VS-81DVI-R** via the Ethernet, using a crossover cable (see section 6.2.1) for direct connection to the PC or a straight through cable (see section 6.2.2) for connection via a network hub or network router.

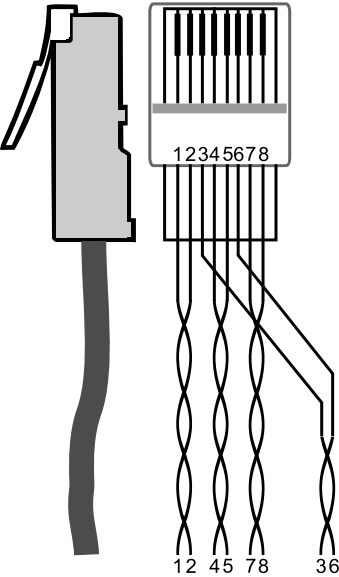
6.2.1 Connecting the ETHERNET Port directly to a PC (Crossover Cable)

You can connect the Ethernet port of the **VS-81DVI-R** to the Ethernet port on your PC, via a crossover cable with RJ-45 connectors, as Table 4 and Figure 4 define.

Figure 4: RJ-45 PINOUT

Table 4: Crossover Cable RJ-45 PINOUT

EIA /TIA 568A Side 1		EIA /TIA 568B Side 2	
PIN	Wire Color	PIN	Wire Color
1	White-orange	1	White-green
2	Orange	2	Green
3	White-green	3	White-orange
4	Blue	4	Blue
5	White-blue	5	White-blue
6	Green	6	Orange
7	White-brown	7	White-brown
8	Brown	8	Brown
Pair 1	4 and 5	Pair 1	4 and 5
Pair 2	1 and 2	Pair 2	3 and 6
Pair 3	3 and 6	Pair 3	1 and 2
Pair 4	7 and 8	Pair 4	7 and 8



This type of connection is recommended for identification of the factory default IP Address of the **VS-81DVI-R** during the initial configuration

After connecting the Ethernet port, configure your PC as follows:

1. Right-click the My Network Places icon on your desktop.
2. Select **Properties**.
3. Right-click Local Area Connection Properties.
4. Select **Properties**.
The Local Area Connection Properties window appears.

5. Select the Internet Protocol (TCP/IP) and click the **Properties** Button (see Figure 5).

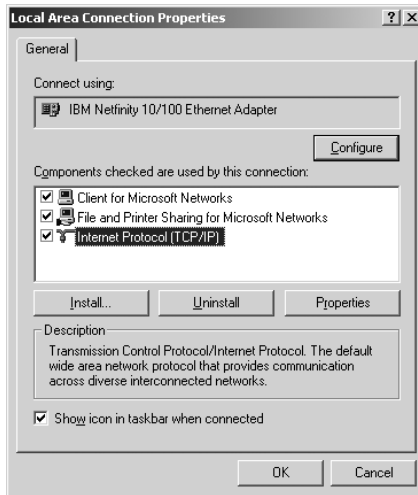


Figure 5: Local Area Connection Properties Window

6. Select Use the following IP Address, and fill in the details as shown in Figure 6.
7. Click **OK**.

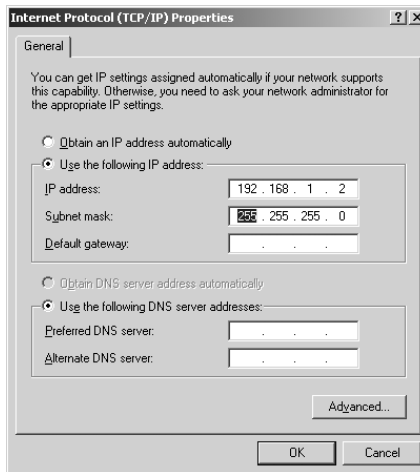


Figure 6: Internet Protocol (TCP/IP) Properties Window

6.2.2 Connecting the ETHERNET Port via a Network Hub (Straight-Through Cable)

You can connect the Ethernet port of the **VS-81DVI-R** to the Ethernet port on a network hub or network router, via a straight-through cable with RJ-45 connectors, as Table 5 defines:

Table 5: Straight-through Cable RJ-45 PINOUT

Side 1		Side 2	
PIN	Wire Color	PIN	Wire Color
1	White-orange	1	White-orange
2	Orange	2	Orange
3	White-green	3	White-green
4	Blue	4	Blue
5	White-blue	5	White-blue
6	Green	6	Green
7	White-brown	7	White-brown
8	Brown	8	Brown

6.3 Configuring the Ethernet Port

To configure the ETHERNET port, do the following:

1. Connect the ETHERNET port as described in section 6.2.1.
2. Insert the CD-ROM in the CD-ROM drive, double click the SetFC11_xx.exe¹ file and follow the on-screen instructions². Both the Ethernet Configuration Manager and the Virtual Serial Port Manager are downloaded.
3. Click the appropriate shortcut in the Start menu's Programs folder. The Configuration Manager window (see Figure 7) opens.
4. Click the Search button³ (or the Action menu's, Search Board command). The MAC Address for the found ETHERNET port appears in the Device List.
5. Change the settings according to your network requirements and then click the Config button (or the Action menu's, Config command) to apply the settings.

Note that clicking the Config button will alter the IP settings of the ETHERNET port

¹ File names are liable to change from time to time

² The latest version appears on our Web site at <http://www.kramerelectronics.com>

³ To automatically search for devices

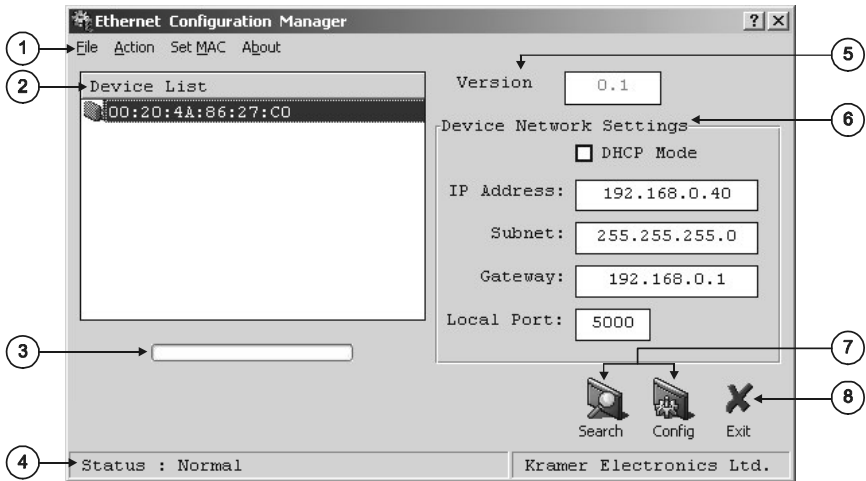


Figure 7: The Ethernet Configuration Manager Window

Table 6: Ethernet Configuration Manager Window Functionality

#	Feature	Function
1	Menu bar	File
		The <i>Exit</i> command closes the Configuration Manager application
		Action
		The <i>Search Board</i> command seeks the VS-81DVI-R device that connects to the PC via the ETHERNET port, and displays it and its corresponding settings; The <i>Config</i> command adjusts the VS-81DVI-R according to the displayed data
		Set MAC ¹
		For factory use only (click the <i>Password</i> command to enter the password)
		About
		Displays software information, including the software version
2	Device List	Displays the MAC Address
3	Progress Bar	Shows the progress
4	Status Bar	Shows the status
5	Version	Displays the firmware version
6	Device Network Settings Area	DHCP¹ Mode Check Box: When selected, configures the Ethernet port to obtain an IP address automatically from the DHCP server. When cleared, manual configuration of the Ethernet port is required to obtain an IP address (Static IP) IP Address: A 32-binary digit number obtained from your Network Administrator that identifies the Ethernet port that is currently being configured Subnet: A 32-binary digit number obtained from your Network Administrator, which combined with the IP Address, identifies which network your device is on Gateway: A network position serving as an entry to another network or to the Internet (only relevant in the Active Routing mode)
7	Exit Button	Closes the Configuration Manager application
8	Action Buttons	Search: seeks the devices that connect to the PC via the ETHERNET port, and displays them and their corresponding settings Config: adjusts the according to the displayed data

¹ See the definition in Table 1

6.3.1 Setting a Virtual Port

If the control application cannot work with an Ethernet driver, use the Kramer Virtual port driver as follows:

1. Run the Virtual Serial Port Manager Application.
The Virtual Serial Port Manager window appears (see Figure 8).

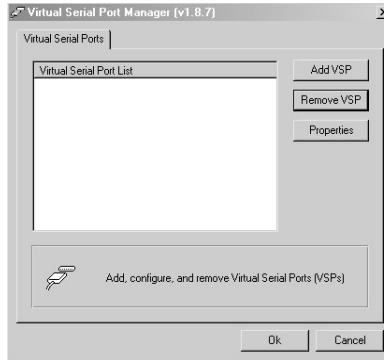


Figure 8: The Virtual Serial Port Manager Window

2. Press the **Add VSP** button to add a serial port and type the IP settings according to the IP address and local port of your **VS-8DVI-R** (see Figure 9).

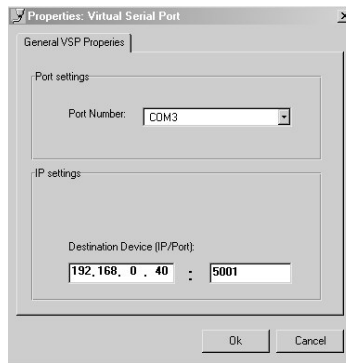


Figure 9: The Virtual Serial Port Properties Window

3. You can set a virtual port for each local port on your **VS-8DVI-R** (see Figure 10).

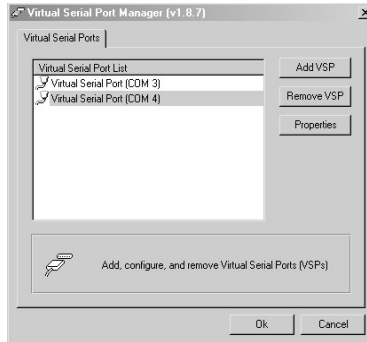


Figure 10: The Virtual Serial Port Properties Window (COM 3 and COM 4)

4. In the control application, choose the COM-port connection according to your virtual serial port connections (see Figure 11).

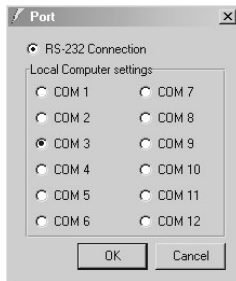


Figure 11: The Port Window – Selecting a Virtual Serial Port

6.3.2 Setting an Ethernet Connection

If the control application can directly connect to the Ethernet driver, select the host IP and port number, as illustrated in Figure 12.

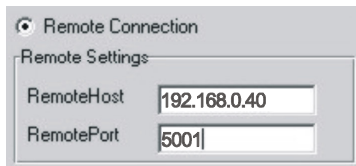


Figure 12: The Port Window – Selecting a Remote Connection

7 Technical Specifications

Table 7 includes the technical specifications:

Table 7: Technical Specifications¹ of the VS-81DVI-R

INPUTS:	8 DVI-D ² , 1.2Vpp on DVI Molex 24pin female connectors; DDC signal 5Vpp (TTL)
OUTPUT:	1 DVI-D ² , 1.2Vpp on a DVI Molex 24pin female connector; DDC signal 5Vpp (TTL)
RESOLUTION:	Up to UXGA
POWER SOURCE:	100–264VAC; 50/60Hz
CONTROLS:	Front panel buttons, Infra-red remote control transmitter, RS-232, Ethernet
DIMENSIONS:	19-inch (W), 7-inch (D), 1U (H)
WEIGHT:	2.5 kg. (5.5 lbs.) approx.
ACCESSORIES:	Power cord ³ , Null modem adapter, IR remote control transmitter, Windows®-based software

¹ Specifications are subject to change without notice

² On a DVI-I connector. Note that only the digital signal (DVI-D) is available on the DVI connector

³ We recommend that you use only the power cord that is supplied with this machine

LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for seven years from the date of the first customer purchase.

WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the Web site www.kramerelectronics.com.
2. Any product, on which the serial number has been defaced, modified or removed.
3. Damage, deterioration or malfunction resulting from:
 - i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
 - ii) Product modification, or failure to follow instructions supplied with the product
 - iii) Repair or attempted repair by anyone not authorized by Kramer
 - iv) Any shipment of the product (claims must be presented to the carrier)
 - v) Removal or installation of the product
 - vi) Any other cause, which does not relate to a product defect
 - vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer. This equipment has been tested to determine compliance with the requirements of:

EN-50081:	"Electromagnetic compatibility (EMC); generic emission standard. Part 1: Residential, commercial and light industry"
EN-50082:	"Electromagnetic compatibility (EMC) generic immunity standard. Part 1: Residential, commercial and light industry environment".
CFR-47:	FCC Rules and Regulations: Part 15: "Radio frequency devices Subpart B – Unintentional radiators"

CAUTION!

- ☒ Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- ☒ Use the supplied DC power supply to feed power to the machine.
- ☒ Please use recommended interconnection cables to connect the machine to other components.



For the latest information on our products and a list of Kramer distributors, visit our Web site: www.kramerelectronics.com, where updates to this user manual may be found. We welcome your questions, comments and feedback.



Caution

Safety Warning:

Disconnect the unit from the power supply before opening/servicing.



Kramer Electronics, Ltd.

Web site: www.kramerelectronics.com

E-mail: info@kramerel.com

P/N: 2900-000111 REV 1A